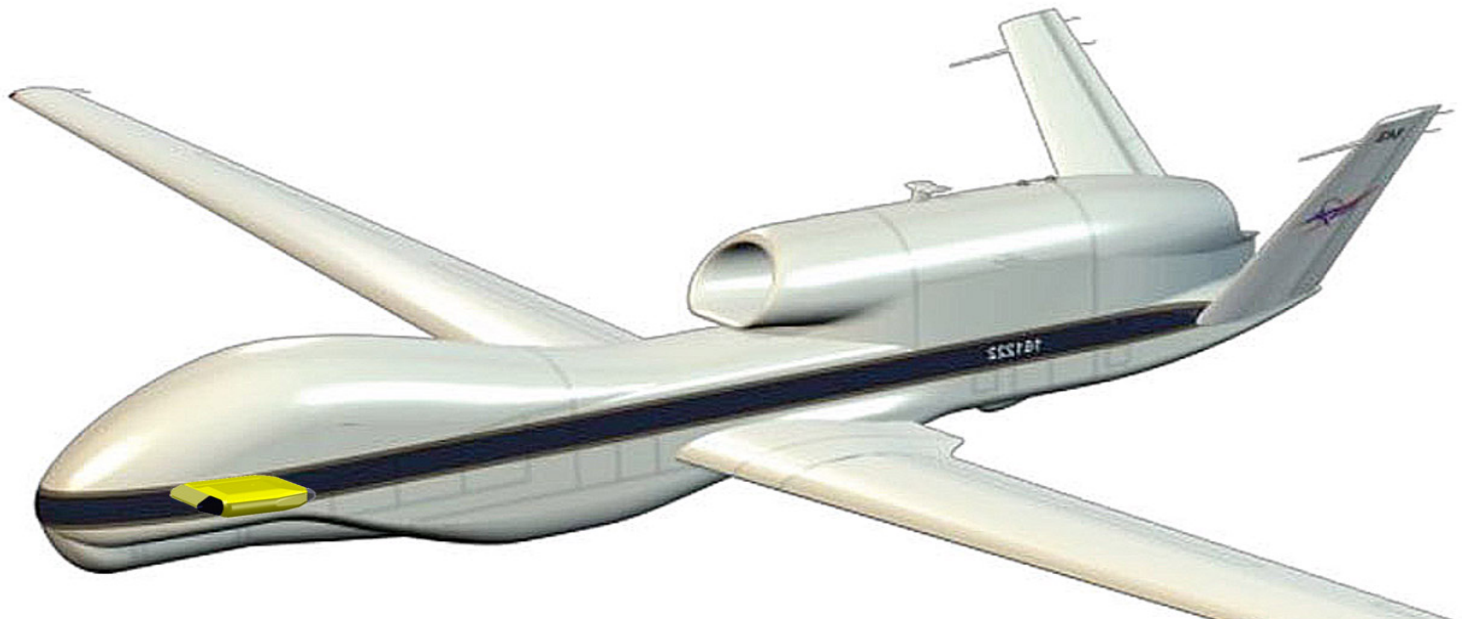


SPEC_{inc}

Hawkeye: A new Sensor for In Situ Microphysical Measurements of Subvisible Cirrus in the TTL



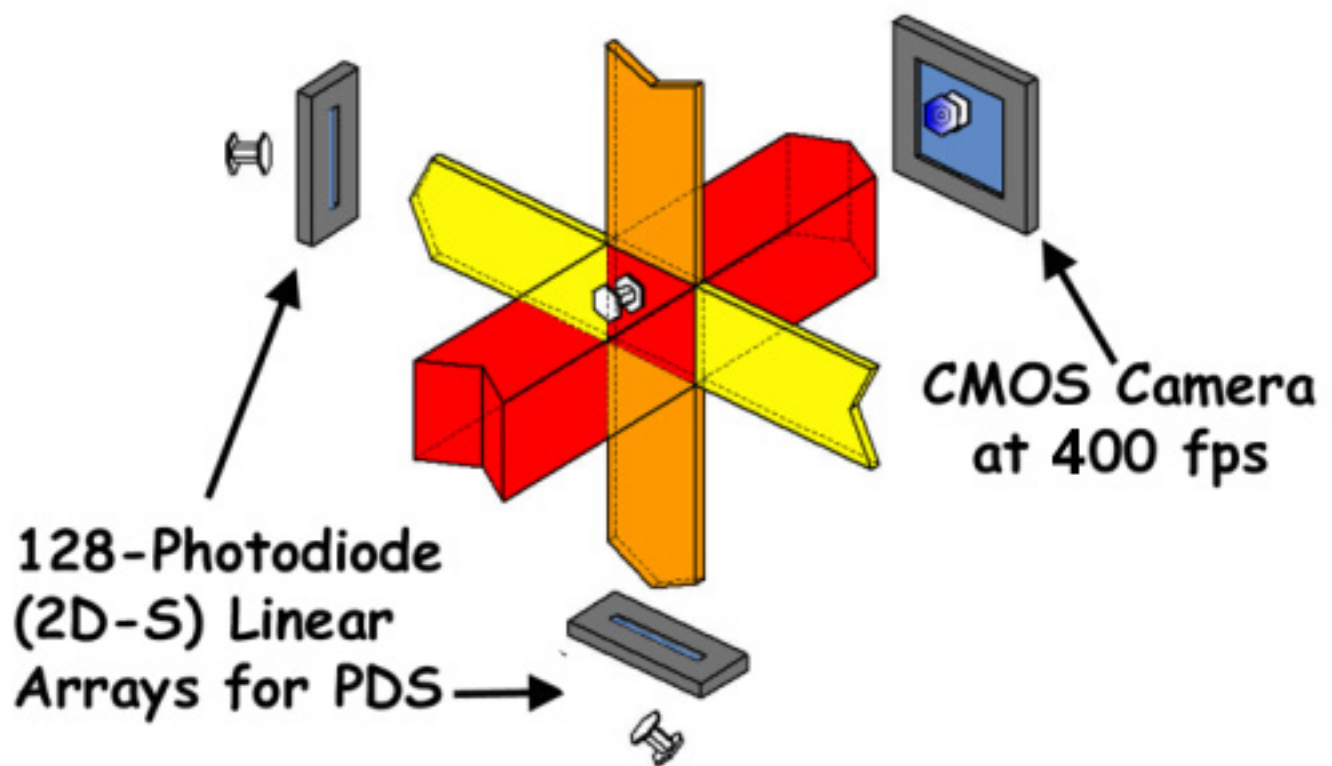
Paul Lawson

**Presented at the ATTREX Science Team Meeting
NASA Dryden Space Flight Center
25 – 27 August 2010**

Hawkeye is an Outgrowth of the 3V-CPI

- 3V-CPI combines a Cloud Particle Imager (CPI), which produces high-resolution ($2.3\text{-}\mu\text{m}$ pixel digital camera) images, with the 2D-S (dual channel $10\text{-}\mu\text{m}$ optical linear array), where the 2D-S is used to trigger the CPI imaging camera.
- Hawkeye modifies one 2D-S channel to $50\text{-}\mu\text{m}$ pixel resolution and incorporates a Fast Forward Scattering Spectrometer Probe (FSSP) that records individual particle statistics and measures size distribution from 0.5 to $50\text{ }\mu\text{m}$.

3V-CPI Electro-optics

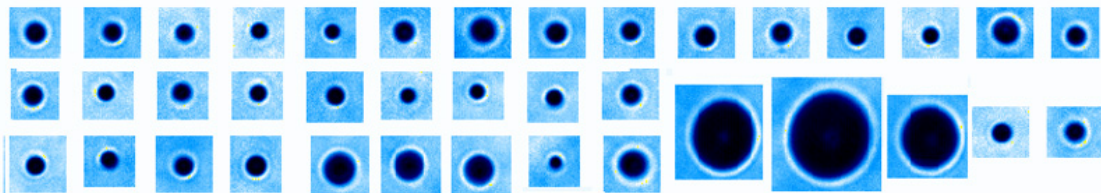


3V-CPI Installed on the SPEC Learjet

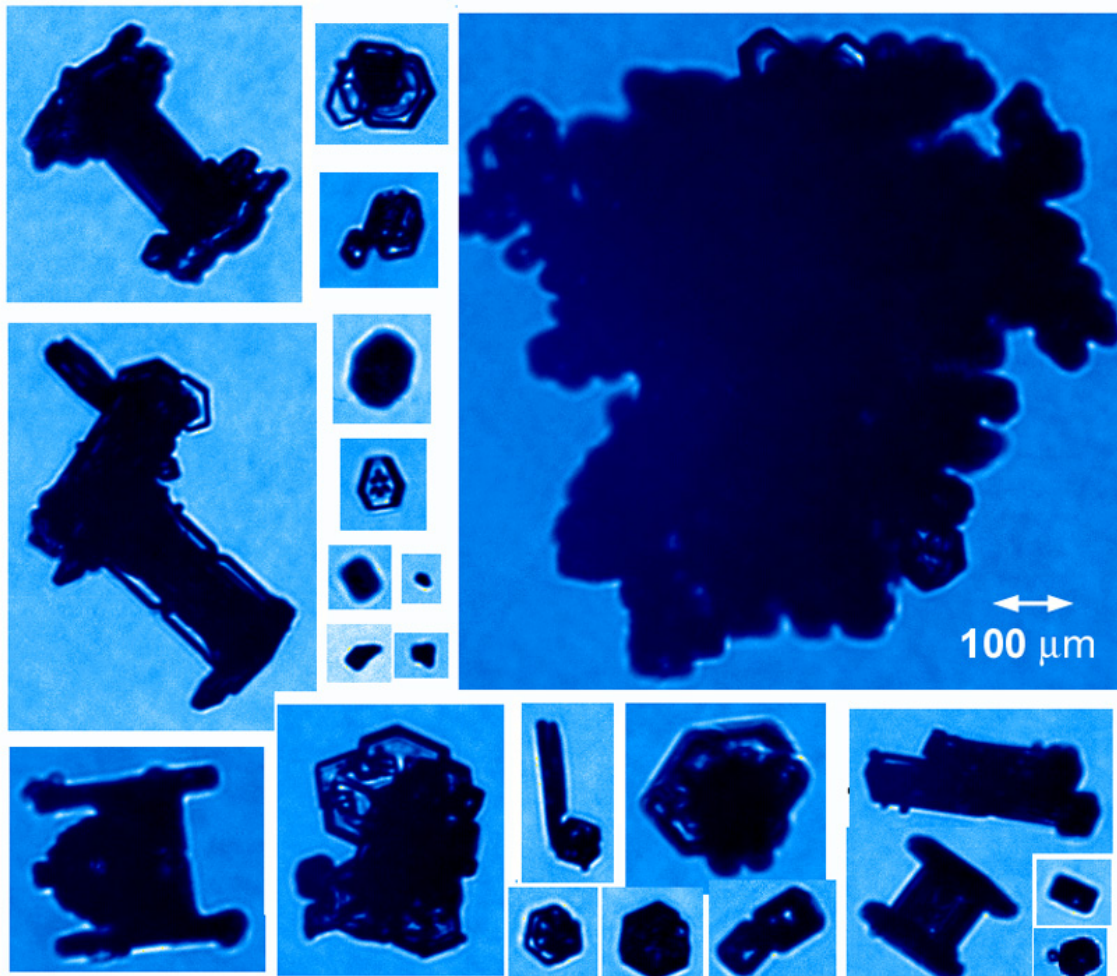


3V-CPI Images from NCAR GV (8-15-2010) in PREDICT

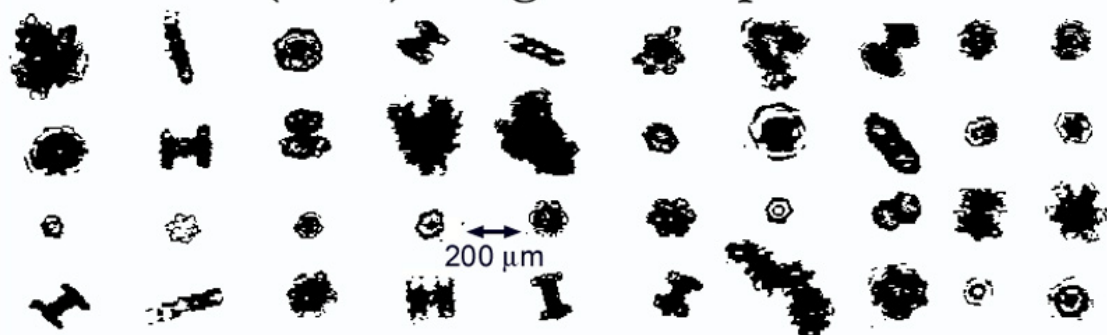
3V-CPI (CPI) Images of Water Drops in Cumulus



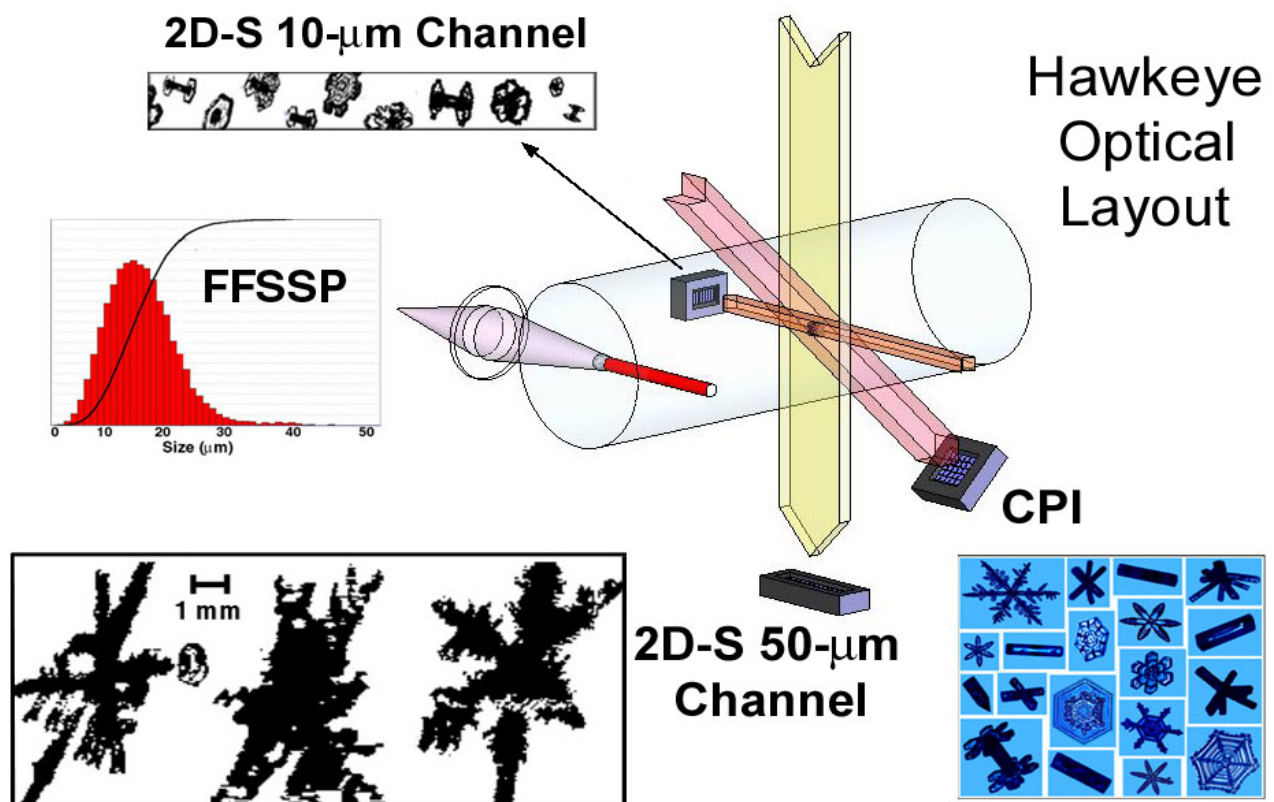
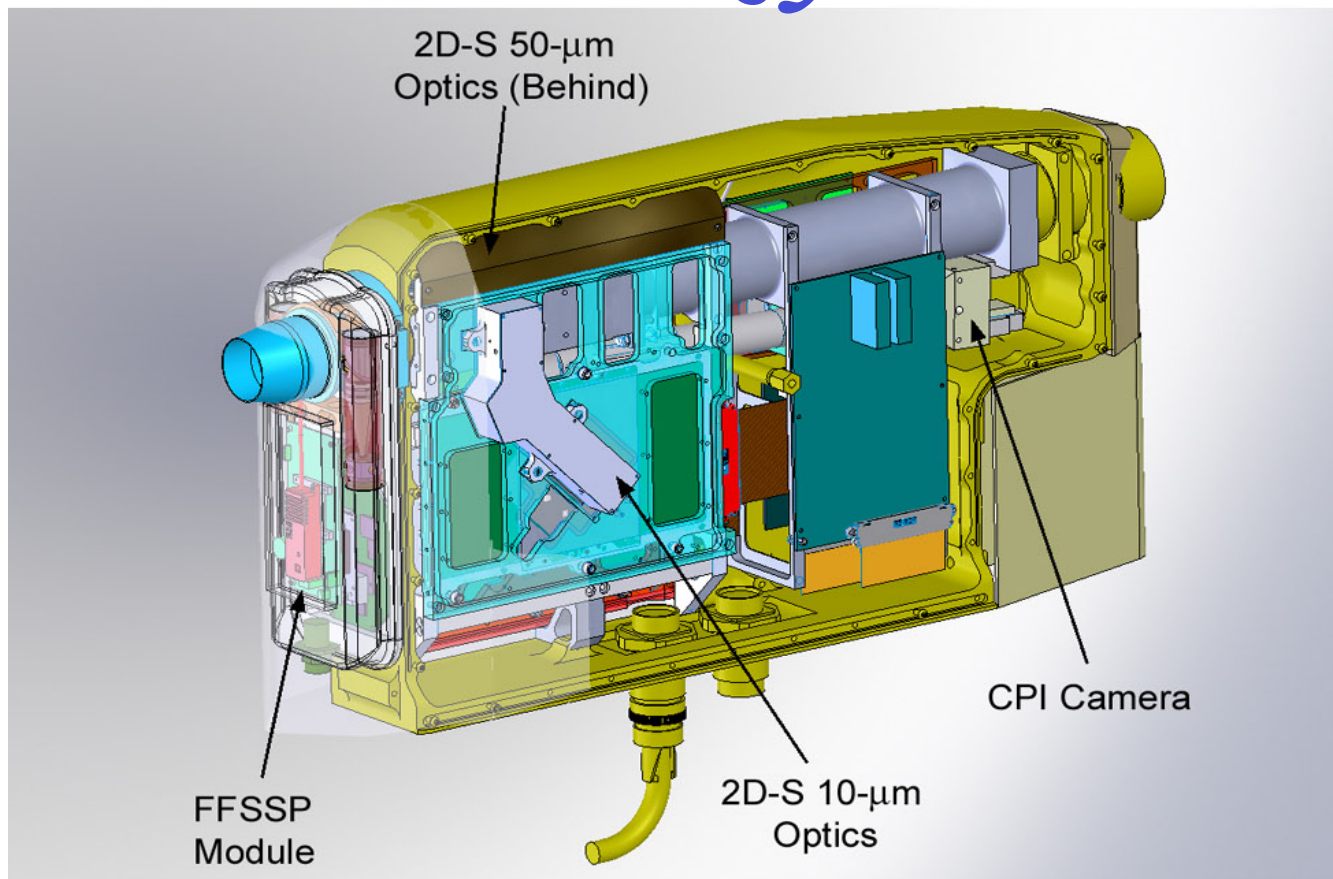
3V-CPI (CPI) Images in Tropical Anvil



3V-CPI (2D-S) Images in Tropical Anvil



Hawkeye



SUMMARY

- **Hawkeye is a standalone sensor and hardened data acquisition system that will be used to measure the microphysical properties of SVC in the TTL.**
- **Hawkeye measures particle size distributions from 0.5 μm to 1 cm and records high-resolution particle images from 10 μm to 2 mm.**
- **The sensor head and hardened data acquisition system each weigh about 60 lbs.**
- **Hawkeye requires about 2.5 KW of 115 VAC 60 Hz power.**